CLAIMS

1.   A method for automatic dose control of one or more chemicals in a liquid treatment system, **characterized** in that the properties of liquid are used to modify the control surface of a linguistic equation (LE) controller adaptively by means of a predefined adaptation model to control the dosing of one or more chemicals to the liquid by one or more controllers.

2.   The method of claim 1, **characterized** in that said linguistic equation is a dynamic linguistic equation.

3.   The method of claim 1, **characterized** in that said linguistic equation is a static linguistic equation.

4.   The method of any of the claims 1–3, **characterized** in that said linguistic equation is a non-linear linguistic equation.

5.   The method of any of the preceding claims, **characterized** in that at least one of said controllers is a feedback controller.

6.   The method of any of the preceding claims, **characterized** in that at least one of said controllers is a feedforward controller.

7.   The method of any of the preceding claims, **characterized** in that the controller setup comprises one of more cascade controllers.

8.   The method of any of the preceding claims, **characterized** in that said properties of the liquid are described by quality index.

9.   The method of claim 8, **characterized** in that said quality index is purity index.

10.   The method of any of the preceding claims, **characterized** in that said liquid is water.

11.   The method of any of the preceding claims, **characterized** in that said liquid treatment system is a water purification system.

12. The method of any of the preceding claims, **characterized** in that said chemicals are coagulants, flocculants, oxidants, reductants, adsorbents, dispersing agents, biocides or defoamers or combinations thereof.

5   13. The method of any of the preceding claims, **characterized** in that said properties of liquid are defined from incoming liquid.

14. The method of any of the preceding claims, **characterized** in that said properties of liquid are defined from outgoing liquid.

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15. The method of any of the preceding claims, **characterized** in that said adaptation is performed by LE-model.

16. The method of any of the claims 1–15, **characterized** in that said adaptation is

15   performed by fuzzy model.

17. The method of any of the preceding claims, **characterized** in that said adaptation is based on remote operation.

20   18. A device arrangement for automatic dose control of chemicals in liquid treatment system, **characterized** in that it comprises one or more adaptation models. and controllers, and the properties of liquid are arranged to modify the control surface of a linguistic equation (LE) controller adaptively by means of a predefined adaptation model, to control the dosing of chemicals to the liquid by one or more

25   controllers.

19. The device arrangement of claim 18, **characterized** in that said linguistic equation is a dynamic linguistic equation.

30   20. The device arrangement of claim 18, **characterized** in that said linguistic equation is a static linguistic equation.

21. The device arrangement of any of the claims 18–20, **characterized** in that said linguistic equation is a non-linear linguistic equation.

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22. The device arrangement of any of the claims 18–21, **characterized** in that at least one of said controllers is a feedback controller.

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23.   The device arrangement of any of the claims 18–22, **characterized** in that at least one of said controllers is a feedforward controller.

24.   The device arrangement of any of the claims 18–23, **characterized** in that the controller setup comprises one of more cascade controllers.

25.   The device arrangement of any of the claims 18–24, **characterized** in that said properties of the liquid are described by quality index.

26.   The device arrangement of claim 25, **characterized** in that said quality index is purity index.

27.   The device arrangement of any of the claims 18–26, **characterized** in that said liquid is water.

28.   The device arrangement of any of the claims 18–27, **characterized** in that said liquid treatment system is a water purification system.

29.   The device arrangement of any of the claims 18–28, **characterized** in that said chemicals are coagulants, flocculants, oxidants, reductants, adsorbents, dispersing agents, biocides or defoamers or combinations thereof.

30.   The device arrangement of any of the claims 18–29, **characterized** in that said properties of liquid are defined from incoming liquid.

31.   The device arrangement of any of the claims 18–30, **characterized** in that said properties of liquid are defined from outgoing liquid.

32.   The device arrangement of any of the claims 18–31, **characterized** in that said adaptation is arranged to be performed by LE-model.

33.   The device arrangement of any of the claims 18–31, **characterized** in that said adaptation is arranged to be performed by fuzzy model.

34.   The device arrangement of any of the claims 18–33, **characterized** in that said adaptation is based on remote operation.

35.   The device arrangement of any of the claims 18–34, **characterized** in that it further comprises an intelligent analyzer.